

# **An NCPR Working Paper**

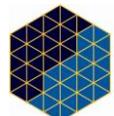
## **The Learning Communities Demonstration Rationale, Sites, and Research Design**

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## Overview

With their open admissions, low cost, and convenient locations, community colleges have taken great strides in recent decades in providing *access* to college for millions of students with diverse ethnic and academic backgrounds. Now, however, community colleges must tackle an even more formidable challenge: how to help increasingly large numbers of academically underprepared students *succeed* in college. The developmental courses to which over half of entering students are directed often prove to be too great a hurdle, and the majority who hope to earn a certificate or a degree, or to transfer, drop out before reaching their goals.

Learning communities are a popular strategy that community colleges nationwide have embraced in support of developmental students. In a learning community, a cohort of students takes two or more courses linked by integrated themes and assignments that are developed through ongoing faculty collaboration. Learning communities are intended to foster active and collaborative learning and to create stronger relationships among students and between students and faculty. These elements are theorized to increase students' motivation and sense of belonging, which in turn drive their effort, learning, persistence, and, ultimately, success.

While the number of learning community programs continues to grow, rigorous studies measuring their *effectiveness* are limited. To address this need for evidence, the Learning Communities demonstration, launched in 2007, uses random assignment to test models of learning communities at six community colleges: Kingsborough Community College, Queensborough Community College, Hillsborough Community College, Merced College, Houston Community College System, and Community College of Baltimore County. Five models serve developmental students in their first semester, and the sixth model enrolls second-semester students. The study is designed to answer three sets of questions:

1. How can learning communities be designed to address the needs of academically underprepared students?
2. What are the effects of learning communities on student achievement, as measured by test scores, credits earned, and grades? What are the effects of learning communities on students' persistence in higher education?
3. What do learning communities cost and how do these costs compare with the costs of standard college programs for students with low basic skills?

Preliminary findings will be available in 2009. This working paper describes the study's design, including a summary of the theoretical and empirical research relevant to learning communities, descriptions of the sites and their learning community models, the random assignment procedures, and plans for data analysis.



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The Authors



## Introduction

Community colleges play a unique and indispensable role in higher education, each year offering millions a chance at a college education without regard to their level of academic preparation. Community colleges now serve close to half of all undergraduates and disproportionately high numbers of undergraduates of color.<sup>1</sup> With their open admissions, low cost, and convenient locations, community colleges enroll a heterogeneous mix of older or dislocated workers returning to school for retraining, welfare clients seeking short-term job training, and younger students in pursuit of an associate's degree or seeking to transfer to a four-year institution.

Having taken great strides in recent decades in providing *access* to a postsecondary education for so many, community colleges must now tackle an even more formidable challenge: how to help large numbers of academically underprepared students *succeed* in college. As enrollment steadily grows, an alarmingly high and steadily increasing percentage of students score too low on diagnostic tests to enroll in credit-bearing, college-level classes. In most community colleges, over half of entering students are directed to remedial education in reading, writing, and mathematics.<sup>2</sup> To make matters worse, at most, only about 70 percent of these "developmental" students pass all their precollege reading and writing courses, and only about 30 percent pass all their developmental math courses, even after multiple attempts.<sup>3</sup> Discouraged and unable to afford being students for long, the majority of developmental students end up dropping out without earning a certificate or a degree and without transferring to a four-year institution.<sup>4</sup>

Colleges are also facing growing pressure to pay attention to data on access, retention, and persistence and to show evidence of their progress — or lack thereof — in improving student success rates. This drive toward increased accountability in the postsecondary sector is nowhere more clearly stated than in the conclusions of the Commission on the Future of Higher Education (the Spellings Commission) in 2006. Charged with making recommendations that would position colleges and universities to educate and train American's future workforce, the 19-member commission focused on four areas: access, affordability, the standards of quality in instruction, and the accountability of institutions of higher learning to their constituencies (students, families, taxpayers, and other investors in higher education). For the first time in their history, community colleges are being asked to routinely track and report on their completion

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<sup>1</sup>In 1999-2000, one out of three of all undergraduate students ages 19 to 23 were enrolled in the nation's 1,100 community colleges. Students of color, particular Hispanics, are overrepresented in community colleges, compared with four-year institutions (Horn, Peter, and Rooney, 2002).

<sup>2</sup>Dougherty (1994, 2003); McCabe (2000); Roueche and Roueche (1999).

<sup>3</sup>Attewell, Lavin, Domina, and Levey (2006). In the present paper, the terms "developmental" and "remedial" are treated as synonyms.

<sup>4</sup>Adelman (2004).

rates and “learning outcomes of students.” The need for affordable, effective, and feasible interventions has grown even more urgent as a result of this development.

An extremely popular choice for colleges nationwide is the adaptation of a century-old college reform called “learning communities.” Modern learning communities in community colleges typically last one semester, enroll between 20 and 30 first-year students together in two or three linked courses in which curricula are integrated and are loosely organized under an overarching theme and in which such pedagogical practices as active and collaborative learning and cross-disciplinary instruction and experiences are encouraged. The “theory of change” underlying learning communities posits that students in learning communities become more engaged in learning and in college life because they are more likely to interact socially and intellectually with the other students in their courses, form stronger relationships with faculty, and make connections across disciplines and between their academic and personal experiences. This increased social integration and intellectual engagement strengthens the motivation to pursue educational goals.

Community colleges, in their quest for reforms that work for struggling students, have embraced learning communities in increasing numbers over the past few decades. With a few important exceptions, however, studies of learning communities have failed to create the knowledge base to support this trend. Most of the research on learning communities has been unable to establish causal links between the intervention and outcomes, especially academic outcomes. More specifically, with only one or two exceptions, evaluations of learning communities and most interventions designed to help developmental college students succeed have failed to use the “gold standard” of random assignment design.

A Request for Proposals issued by the Institute of Education Sciences (IES) of the U.S. Department of Education, calling for a focused program of research with an emphasis on experimental methods, has set a new course for evaluation of programs in higher education. IES awarded a five-year grant to fund the National Center for Postsecondary Research (NCPR), a coalition of research organizations including the Community College Research Center at Teachers College, Columbia University; MDRC; and the University of Virginia. As part of this grant, MDRC, with its NCPR partners, launched a multicollage demonstration of learning communities in 2006. The Learning Communities demonstration, which builds on a similar study done by MDRC of learning communities at Kingsborough Community College,<sup>5</sup> tests six different models of learning communities in six community colleges across the country. Five of the models serve developmental students, and the sixth is designed for second-semester students

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<sup>5</sup>Scrivener et al. (2008).

who have declared an occupational major. The evaluation is designed to answer three sets of questions:<sup>6</sup>

1. How can learning communities be designed and operated to address the needs of academically underprepared students with low basic English and math skills? Do such learning communities offer a classroom and college experience that is substantially different from traditional remedial education programs?
2. What are the effects of learning communities on student achievement, as measured by standardized test scores in English and math, credits earned in developmental and regular college courses, grades, and other outcomes? What are the effects of learning communities on students' persistence in higher education?
3. What do learning communities cost, and how do their costs compare with the costs of standard college programs for students with low basic skills?

As of the end of 2007, all six Learning Communities demonstration sites were in operation, and random assignment of students to program and control groups was well under way, but the earliest findings on impacts are not expected for at least three years.<sup>7</sup>

The purpose of the present paper — the first in a series of planned publications resulting from this study — is to present the rationale for launching a major national demonstration of learning communities in community colleges and to describe the research design, goals, and methodology of the study. The remainder of the paper is organized in three sections. The next section provides a context for the study by reviewing the history of and the literature on learning communities. Then the paper describes the sites selected for the study and their learning communities, touching on progress to date in enrolling students in the study and efforts to assist the six colleges in operating their programs as robust learning communities, with a high degree of fidelity to their design. Finally, the concluding section of the paper describes the plans for conducting the demonstration's implementation, impact, and cost studies.

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<sup>6</sup>Results from the demonstration will be informed by comparative analyses of the effectiveness of learning communities and other remediation strategies in selected states and systems in which the demonstration is taking place. The data collection and analysis will be carried out by NCPR partners and is not addressed in the present paper, which focuses exclusively on the experimental evaluation of learning communities.

<sup>7</sup>An interim report focusing on the implementation of the Learning Communities demonstration is expected to be released in 2009, and a second report, including impact findings, is scheduled for 2011. A how-to guide on designing and operating an effective learning communities program — based on the experiences of the six demonstration sites — will follow in late 2011.



## The Case for Learning Communities: Review of the Literature

Community colleges currently enroll 46 percent of all undergraduates and have a student population far more representative of American society than four-year college and university populations.<sup>8</sup> Nationally, community colleges enroll 47 percent of black undergraduates, 55 percent of Hispanic undergraduates, 47 percent of Asian/Pacific Islander undergraduates, and 57 percent of Native American undergraduates.<sup>9</sup> Community colleges also serve as a primary entry point into postsecondary education for adults who have no previous higher education, low-income individuals, and first-generation students.<sup>10</sup>

The considerable literature on community college persistence indicates that most community college students who are taking advantage of this unparalleled access to higher education are not likely to earn a degree or a certificate. Bailey and Alfonso report that of all first-time college students who entered a community college in 1995, only 36 percent earned a certificate, an associate's degree, or a bachelor's degree within six years.<sup>11</sup>

High attrition rates are also the result of large and increasing numbers of students entering postsecondary education underprepared for college-level coursework — the bulk of whom are enrolling in community colleges.<sup>12</sup> Greene and Foster found that approximately two-thirds of recent high school graduates enter college each year, yet many of these students are unprepared academically for college-level material.<sup>13</sup> Research has shown that students with weak academic preparation are less likely to enroll and succeed in postsecondary education.<sup>14</sup>

## The Need for Developmental Education

Community colleges have responded to student underpreparedness by offering developmental courses. In 2000, 42 percent of first-year students at two-year colleges enrolled in one or more developmental reading, writing, or mathematics course.<sup>15</sup> Yet the effectiveness of postsecondary developmental education has been the subject of an ongoing debate among educa-

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<sup>8</sup>Cohen and Brawer (1991); Gardiner (1994).

<sup>9</sup>American Association of Community Colleges (2007).

<sup>10</sup>Cohen and Brawer (1996); Laanan (1995); Green (2006).

<sup>11</sup>Bailey and Alfonso (2005).

<sup>12</sup>Grimes and David (1999); Bailey, Leinbach, and Jenkins (2005).

<sup>13</sup>Greene and Foster (2003).

<sup>14</sup>Adelman (1999, 2004); Horn and Kojaku (2001).

<sup>15</sup>Parsad and Lewis (2003).

tors, policymakers, and the public.<sup>16</sup> Proponents argue that developmental education is necessary because it expands educational opportunities for underprepared students; critics counter that college-level remediation should be discouraged because offering courses covering content and skills that should have been learned in high school is both inefficient and costly to the higher education system.<sup>17</sup>

Rigorous research on the relationship between developmental education and student outcomes is rare, and the findings are mixed. The results of two recent studies of remedial education in two-year colleges in Florida and two- and four-year colleges in Texas suggest limited benefits. The Florida study, for example, found that math remediation has a modest positive effect on persistence into the second year of college, and the Texas study found evidence that math remediation may lead to slightly better grades when students take their first college-level math course. However, neither study found that remediation leads to increases in credit completion or to higher levels of degree attainment. The Texas study also found that remediation has a minimal impact on labor market performance.<sup>18</sup>

Evidence that developmental education bolsters student success is provided by a study that examined the effects of English and math developmental education on 28,000 students in four-year institutions in Ohio. Results suggest that students in developmental education are more likely to persist in college than students with similar test scores and backgrounds who are not required to take the courses. They are also more likely to transfer to a higher-level college and to complete a bachelor's degree.<sup>19</sup>

## Approaches to Educating Developmental Students

Community colleges have responded to their alarming and stubbornly persistent failure rates by developing a broad range of programs to offer additional support to developmental students, including orientation seminars, tutorial sessions, discipline-specific help, learning assistance centers, learning labs, supplemental instruction, learning communities, and individualized learning programs.<sup>20</sup> Levin and Koski identify the key ingredients of successful interventions for underprepared students in college. Interventions should foster *motivation* by building on the interests and goals of the students and providing institutional credit toward degrees or certificates; offer *substance* by teaching skills within a substantive or real-world context, as opposed to a more abstract approach; encourage *curiosity and inquiry-based learning*; promote *independ-*

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<sup>16</sup>Levin and Calcagno (2008).

<sup>17</sup>Hoyt and Sorenson (2001); Bennet (1994); MacDonald (1998).

<sup>18</sup>Calcagno and Long (2008); Martorell and McFarlin (2007).

<sup>19</sup>Bettinger and Long (2005).

<sup>20</sup>Jarvi (1998); Bailey and Alfonso (2005).

*dent thinking; and use multiple approaches to learning*, such as collaboration, teamwork, technology, and tutoring.<sup>21</sup>

Learning communities — a curricular model that links two or more classes together for a cohort of students — potentially include all these ingredients. Accordingly, they are currently one of the most popular interventions being tried to help remedial students. According to the results of the Second National Survey of First-Year Academic Practices (a survey conducted in 2002 by the Policy Center on the First Year of College), 62 percent of the 966 responding research universities, baccalaureate colleges, and community colleges offer a learning community program. Among the 341 responding community colleges, 60 percent offer a learning community program.<sup>22</sup>

## The Origins of Learning Communities

Several scholars in the field attribute the underlying ideas and practices of learning communities to John Dewey and Alexander Meiklejohn, linking Dewey's ideas about the importance of social interaction and democracy in learning processes with the community-building and democratic practices of Meiklejohn's Experimental College at the University of Wisconsin.<sup>23</sup> However, others in the field challenge the historical origins of the model and suggest that the ideas of Meiklejohn and Dewey should be revisited in light of the goals of present-day learning communities. In their article on reconsidering learning communities, Talburt and Boyles state that the “compatibility of the educational ideas of Alexander Meiklejohn and John Dewey are debatable at best”<sup>24</sup> and go on to question how relevant these philosophies are to the present state of learning communities.

After the closing of Meiklejohn's Experimental College in 1932, similar innovative and experimental approaches to education emerged in the 1960s. The most notable are the University of California-Berkeley's integrated curriculum program, established by a student of Meiklejohn's Experimental College; and the learning community program at San Jose State College, established by Merv Cadwallader, who later brought his ideas to The Evergreen State College.<sup>25</sup>

The learning community model was revitalized, and a number of programs were developed nationwide, following the founding of the Washington Center for Improving the Quality

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<sup>21</sup>Levin and Koski (1998).

<sup>22</sup>Barefoot (2002).

<sup>23</sup>For further reading, see Fogarty and Dunlap with others (2003); Lenning and Ebbers (1999); Smith (2001); Zhao and Kuh (2004).

<sup>24</sup>Talburt and Boyles (2005), p. 214.

<sup>25</sup>Smith (2001).

of Undergraduate Education at The Evergreen State College in 1985.<sup>26</sup> In its initial days as a resource center, the Washington Center supported colleges responding to the National Institute of Education's recommendations, one of which was that all postsecondary institutions establish learning communities.<sup>27</sup> In need of a model that would foster a sense of community among their diverse student bodies while simultaneously supporting the needs of their unprepared learners, community colleges were among the first to heed this recommendation.<sup>28</sup>

## **Learning Communities in Community Colleges Today: Theory of Change and Core Dimensions**

At community colleges, learning communities consist at a minimum of a cohort of students enrolled together in two or three linked courses. Learning communities typically last one semester and are usually offered to freshman students. The cohort typically consists of a group of students with a common course requirement (for example, developmental English or a history class).<sup>29</sup> Sometimes two developmental courses, such as mathematics and English, are linked to each other, and sometimes a developmental course is linked with a regular, college-level course such as sociology or psychology. Increasingly, colleges include a “student success course” in the link — an increasingly popular strategy to help students learn study and time management skills and how to navigate in the college environment.

All learning communities are intended to foster social integration and collaborative learning and to strengthen curricular coherence.<sup>30</sup> The theory of change for learning communities in community colleges builds on the well-documented finding that the relationships that students form with faculty and other students enable and encourage students to persist and succeed in their educational pursuits. Collaborative learning and other experiences offered by learning communities enhance a sense of belonging, which, in turn, leads to an increase in student effort; it is this effort and engagement in learning processes that drives student knowledge acquisition and the development of academically relevant skills.<sup>31</sup>

In addition to improving knowledge acquisition, learning communities are theorized to facilitate cross-curricular connections, thereby deepening learning and promoting higher-order thinking skills. Curricular integration, initiated by linking courses, allows students to more easily

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<sup>26</sup>Fogarty and Dunlap with others (2003); Smith (2001).

<sup>27</sup>Study Group on the Conditions of Excellence in American Higher Education (1984).

<sup>28</sup>Fogarty and Dunlap with others (2003).

<sup>29</sup>Jaffee (2007); Maher (2005).

<sup>30</sup>Fogarty and Dunlap with others (2003); Tinto (1997); Zhao and Kuh (2004).

<sup>31</sup>Tinto (1993, 1997).

ly make connections across disciplines and topics and with their own personal experience.<sup>32</sup> Figure 1 illustrates these relationships as a logic model.

The theory of change implies that certain core features of learning communities need to be in place for these positive outcomes to be realized. Empirically, of course, learning communities do vary in their robustness and the strength of these features. The most significant variations occur in implementation of the following dimensions: curricular integration; pedagogical strategies that encourage active, collaborative, and meaningful learning; faculty and student relationships and interactions; and the availability and integration of supplemental services.

### **Curricular Integration**

“Integration” refers to curricular or programmatic linkages organized around common themes in order to construct shared, relevant teaching and learning experiences. Examples of integration include aligned syllabi, joint homework assignments, and project-based and other learning experiences that encourage drawing on materials in all the linked courses. The level of integration in learning communities varies from very little to deep integration and tends to depend on how courses are linked:

- **Student cohorts in unmodified courses.** Students from a larger lecture-based class meet separately as a cohort, or subgroup, of this class, to discuss or write about the lecture’s content. Though the content of the smaller class will match that of the larger lecture, the faculty from the two classes generally do not collaborate.
- **Linked or clustered courses.** Students enroll together as a cohort in two or more classes with integrative assignments and a unifying theme. The class instructors who work within this structure collaborate to link the courses.
- **Team-taught or coordinated studies programs.** Students’ and faculty’s course loads are fully integrated. Students meet as a group with all the program’s faculty or in smaller groups, in an attempt to create an interdisciplinary and integrative approach to learning.<sup>33</sup>

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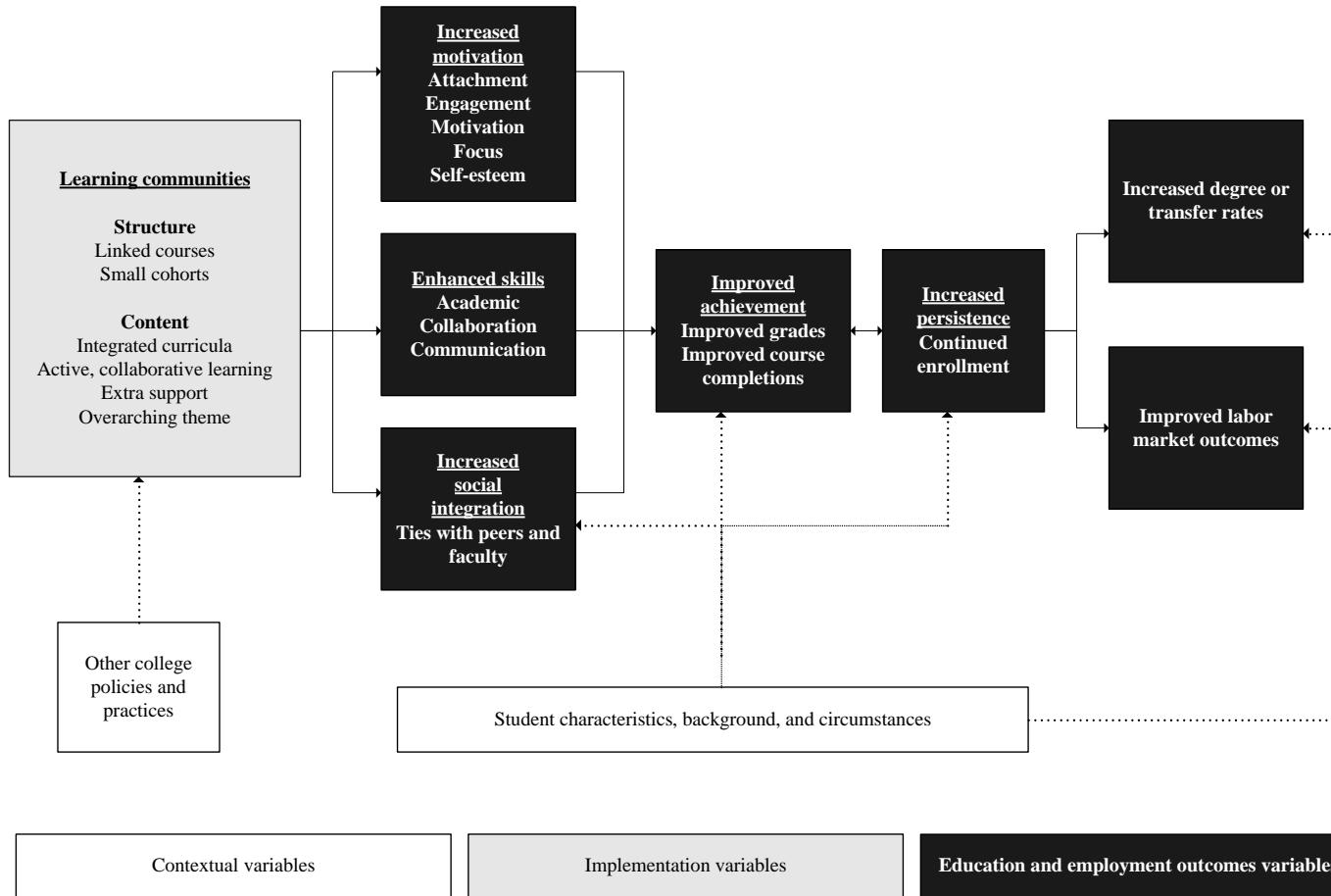
<sup>32</sup>Tinto (1997).

<sup>33</sup>Lardner and others (2005). Price (2005) offers a similar typology of learning communities, defined by the level of integration.

## The Learning Communities Demonstration

**Figure 1**

### Learning Communities in Community Colleges: A Logic Model



## **Instructional Strategies**

Learning communities create an environment in which certain instructional strategies that promote active, student-driven teaching and learning are more possible than in the traditional classroom. “Active learning” refers to the use of pedagogy that promotes critical thinking through experiential, collaborative, and contextualized experiences that feel relevant and meaningful to students. Examples of this include field trips; service learning projects; group work, discussion, and debate in the classroom; and assignments that “force” students to think and problem-solve rather than memorize material.<sup>34</sup>

## **Social Integration**

Learning communities are designed to promote closer ties among students and faculty. Faculty in learning communities have greater opportunity to work together, to share successful practices, and to communicate with each other about their students. Students have a chance to build networks, form study groups, support each other, and learn from students in other ethnic or socioeconomic groups.

## **Supplemental Student Support Services**

Learning communities create opportunities to provide students with more knowledge of and access to campus services that enhance academic and social learning, such as tutoring and academic counseling, career guidance, and clubs. Many learning communities integrate some of these services directly into the classroom, by including a tutor or arranging visits from career guidance specialists. Others link with a student success course, in which there is an emphasis on taking advantage of available campus resources, such as support services.

Whatever the specific model of learning communities adopted, the practice is widespread, and hopes are high that this strategy will make a difference in retention and completion rates. Yet little is known about the effectiveness of learning communities, especially at community colleges.

## **The Effectiveness of Learning Communities: A Review of the Literature**

Functioning in at least 40 percent of the nation’s community colleges, learning communities are widespread and are continuing to grow in number. However, while the number of programs grows and the enthusiasm for learning communities builds, rigorous studies measur-

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<sup>34</sup>Stefanou and Salisbury-Glennon (2002).

ing their *effectiveness* are limited. While there is an extensive body of empirical literature devoted to learning communities, the majority of these studies focus on learning communities in four-year postsecondary institutions, lack a proper comparison strategy that would allow causal relationships to be explored, or focus exclusively on such outcomes as social integration rather than on academic outcomes. There are, however, at least two important exceptions to this pattern. Engstrom and Tinto used longitudinal survey data to investigate effects on student behavior and persistence for students in learning communities at 13 community colleges and 6 four-year institutions across the country.<sup>35</sup> In a study that uses a random assignment design, MDRC reports that, compared with students in regular programs, students in learning communities at Kingsborough Community College progressed more quickly through English courses that were required for graduation and were more likely to be enrolled in college three semesters later.<sup>36</sup> Both of these groundbreaking studies are discussed below.

### **Learning Communities and Student Interaction and Engagement**

The research presented in the literature devoted to learning communities is generally encouraging and provides some evidence that cohort membership is related to a more positive college experience, stronger connections among students, and increased interaction around academic activity.

In an evaluation of 40 learning communities at Kingsborough Community College, researchers randomly assigned about 1,500 students into learning communities or a control group (in which students registered in unlinked courses). The study finds that students who were enrolled in learning communities were more satisfied with their overall college experience, experienced a stronger sense of belonging to the college community, and were more engaged in learning.<sup>37</sup> In their major study of learning communities in 13 community colleges, Engstrom and Tinto find that students in learning communities had more positive views of both their classmates and instructors, had stronger perceptions of the support and encouragement that they experienced on campus, and were more likely to feel that their coursework emphasized higher-order thinking skills.

Students in learning communities, according to some studies, are more likely to spend time with other students not only socially but also in academic pursuits.<sup>38</sup> When social and academic activities merge, as they do in successful learning communities, students are able to learn from their peers and simultaneously develop meaningful relationships with them.<sup>39</sup> For exam-

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<sup>35</sup>Engstrom and Tinto (2007).

<sup>36</sup>Scrivener et al. (2008).

<sup>37</sup>Scrivener et al. (2008).

<sup>38</sup>Engstrom and Tinto (2007); Tinto and Goodsell (2003); Tinto (1997).

<sup>39</sup>Tinto (1997).

ple, Tinto and Goodsell reported on the experiences of first-year students in a Freshman Interest Groups (FIGs) at a research university. They found that the collaborative learning that took place in the FIGs allowed students to form friendships while simultaneously participating in academically fruitful activities.<sup>40</sup>

In his small, qualitative study of 13 graduate students participating in a three-semester learning community, Maher found that continuity of knowledge, a shared sense of history about classroom developments, and a sense of “peer responsibility” emerged in student discussions of their cohort membership during the second half of their 10 months together.<sup>41</sup>

Additional support for cohort membership comes from a study conducted by Eteläpelto et al., in which highly involved cohort members viewed other members of the group as motivators for maintaining good study habits and pursuing their academic goals.<sup>42</sup> A small handful of studies, summarized below, examines the association between participation in learning communities in community colleges and such academic outcomes as course completion, grades, and persistence in college.

### **Learning Communities and Academic Achievement Outcomes**

Some studies offer evidence that learning communities improve critical and problem-solving skills — sometimes referred to as “higher-order” thinking. In their study of the relationship between first-year students’ participation in learning communities and their motivation and cognitive learning strategies, Stefanou and Salisbury-Glennon found that there was a significant change in students’ cognitive strategies, including critical thinking and rehearsal, after participating in a learning community.<sup>43</sup> These results support the findings of Tinto’s 1997 study, whose participants — members of a Coordinated Studies Program — spoke of the relationships between their participation in this program and their increased ability to explore and practice concepts that they learned in class.<sup>44</sup>

Most studies that have attempted to measure how learning communities affect learning and other academic outcomes either fail to detect those effects or suffer from serious methodological flaws.<sup>45</sup> However, the two pivotal studies referenced earlier — the Kingsborough College study and Engstrom and Tinto’s longitudinal survey analysis — are the exceptions to this pattern. Both examined the impact of learning communities on academic progress. While the

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<sup>40</sup>Tinto and Goodsell (2003).

<sup>41</sup>Maher (2005).

<sup>42</sup>Eteläpelto, Littleton, Lahti, and Wirtanen (2005).

<sup>43</sup>Stefanou and Salisbury-Glennon (2002).

<sup>44</sup>Tinto (1997).

<sup>45</sup>McPhail, McKusick, and Starr (2006); Zhao and Kuh (2004).

findings from these studies are somewhat less encouraging than the findings discussed above on the effects of learning communities on social integration and engagement, both studies report positive — albeit modest — impacts on academic outcomes.

In their study of learning communities at Kingsborough Community College, researchers report that students moved more quickly through English courses that were required for graduation. However, positive impacts on course completion and credits earned diminished after the semester in which students were enrolled in the learning communities, and no impacts were found on degree attainment. Results on persistence are mixed: No difference was observed in the percentages of students in the program and control groups who enrolled in the next semester or the semester thereafter, but students in learning communities were 5 percentage points more likely to be enrolled *three* semesters later.<sup>46</sup> Interestingly, Engstrom and Tinto also report a 5 percentage point difference in persistence one year later between students who were enrolled in learning communities and the comparison group.<sup>47</sup>

More such rigorous studies of learning communities are badly needed, particularly of impacts on the outcomes that are most worrisome for community colleges, such as progress from developmental to college-level coursework and overall persistence for at-risk groups. It may not be an overstatement to say that the shortage of trustworthy evidence on the effectiveness of learning communities inhibits progress in reducing the overwhelming numbers of students who start in community colleges but fail to succeed. Methodological problems characterize most of the existing research on this and other interventions for remedial students.

The Kingsborough Community College study used random assignment to create a comparison group for students in learning communities. Random assignment provides the best evidence for efficacy because any differences in outcomes can be attributed to the experience offered by learning communities, rather than to preexisting differences in characteristics between students who enroll in learning communities and students who do not.<sup>48</sup> The Learning Communities demonstration, which grew out of the Kingsborough Community College study, uses a random assignment design to evaluate learning communities at six colleges around the country and carries the potential of significantly improving the information that policymakers and practitioners need to meet the needs of developmental students.

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<sup>46</sup>Scrivener et al. (2008)

<sup>47</sup>Engstrom and Tinto (2007).

<sup>48</sup>Myers and Dynarski (2003); Coalition for Evidence-Based Policy (2005); What Works Clearinghouse (2006).

## The Demonstration Sites and Study Intake

This section provides an overview of the Learning Communities demonstration, with descriptions of the six selected sites and their learning community models, the random assignment procedures used to enroll students in the study, and the technical assistance efforts in place to support robust learning communities that are implemented with the highest possible fidelity to their designs.

### Site Recruitment Goals

Consistent with national enrollment trends, the six colleges in the Learning Communities demonstration each serve large numbers of low-income and academically underprepared students. However, the learning communities that were developed by these colleges in response to the similar needs of their students vary along several dimensions, such as what types of courses are linked and the level of curricular integration between the courses. These differences were central to the site recruitment process, as the colleges were chosen to reflect the widest possible range of experiences among students currently enrolled in learning communities at community colleges across the country.

All the sites had previous experience running learning communities. A central guiding protocol for selection was the four-tiered model proposed by Derek Price to classify learning communities along a continuum of *most basic* — “a cohort of students taking at least two courses together” — to *most integrated* — “a cohort of students taking at least two courses together as part of a coordinated studies program in which faculty team-teach an integrated curricula.”<sup>49</sup> At the time the sites were selected, learning communities at Community College of Baltimore County (CCBC) in Baltimore, Maryland, and at Kingsborough Community College (KCC) in Brooklyn, New York, tended toward the *most integrated* end of the spectrum; learning communities at Hillsborough Community College (HCC) in Tampa, Florida, and at Houston Community College System (HCCS) in Houston, Texas, fell closer to the *most basic* end; and learning communities at Queensborough Community College (QCC) in Queens, New York, and at Merced College in Merced (Central Valley), California, lay in the middle.

Beyond capturing the range of learning communities that are available to community college students, primary programmatic criteria for a college’s participation in the study also included a reasonably strong contrast between the experiences of students in learning communities and those of students enrolled in standard classes. This contrast was assessed through ob-

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<sup>49</sup>Price (2005), p. 19

servations of learning communities and conversations with faculty and students at each site. Another programmatic concern was that the learning communities in the evaluation at each site had a common core course in their links — usually developmental math or developmental English — in order to ensure consistency across learning communities within the same college.

A number of additional operational benchmarks guided recruitment and selection efforts. Random assignment requires a large sample size to successfully measure effects; each college demonstrated that it had a large pool of interested and eligible students and that it would be able to generate enough demand for learning communities to make random assignment possible. In addition, each college had to be willing to host multiple site visits and be willing to make necessary modifications in the normal registration procedures to accommodate study intake and random assignment.

Sites were selected and began random assignment throughout 2007. KCC, QCC, and HCC were the first cohort of sites to enroll in the study. The first cohort began enrolling and randomly assigning students in spring 2007 for the fall semester. The second cohort of sites — Merced, HCCS, and CCBC — began random assignment in fall 2007 for the spring 2008 semester. Random assignment will continue for an additional three semesters, through spring 2009 for the first cohort and through fall 2009 for the second cohort.

## **Description of the Colleges and Their Learning Communities**

Two learning communities in the demonstration have developmental math as their core course, and three have developmental English. The core course is linked with another developmental course (in reading, writing, or math), a college-level academic course, or a student success course.<sup>50</sup> A sixth model supports student work in two college-level courses with enrollment in an integrative seminar. Table 1 presents these models in detail, and Table 2 presents selected characteristics of the colleges in the demonstration.

### **Queensborough Community College (QCC)**

QCC is a midsize, single-campus community college. Its learning communities target first-year students who assess into the lowest levels of developmental math. Transfer students who have less than a semester of credits and returning students who have failed one of these courses are also eligible for enrollment in the learning communities. In fall 2007, the learning communities linked developmental math with developmental English or college-level English

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<sup>50</sup>Student success courses, offering between one and three credits, are an increasingly popular strategy that colleges use to help students learn study and time management skills, how to navigate in the college environment, and how to build self-esteem and a sense of responsibility for their own education.

## The Learning Communities Demonstration

**Table 1**

### **Selected Characteristics of the Learning Communities in the Learning Communities Demonstration, by College**

College	Core Course	Linked with:	Basic Configuration		Other Features			
			Tutoring or Supplemental Instruction	Extracurricular Activities (field trips, service learning, and so on)	Themed Links	Master Learner	Career Guidance	
KCC	Integrative Seminar	Two courses required for an occupational major (Accounting, Business Administration, Mental Health and Human Services, Early Childhood Education, and Pre-Nursing/Allied Health)		X	X	X	X	
QCC	Developmental Math	Fall 2007: Developmental English or college-level English Composition Spring 2008: College-level English Composition, Speech, Business, or Sociology				X		
HCC	Developmental Reading	Student Success course				X		
Merced	Developmental English	Developmental Reading, Developmental Math, Student Success course, or college-level course		X		X		
HCCS	Developmental Math	Student Success course		X	X			
CCBC	Developmental English or Reading	College-level Health, Psychology, Speech, History, Computer Information Systems, or Sociology					X	

**The Learning Communities Demonstration**  
**Table 2**  
**Selected Characteristics of the Colleges in the Learning Communities Demonstration**

	KCC Brooklyn, New York	QCC Queens, New York	HCC Tampa, Florida	Merced Merced, California	HCCS Houston, Texas	CCBC Baltimore, Maryland
Degree of urbanization	Urban	Urban	Urban	Rural	Urban	Suburban
Total enrollment (FTEs) <sup>a</sup>	14,687	13,150	21,293	10,116	45,526	19,446
Enrollment by race/ethnicity (%)						
White non-Hispanic	38.6	24	52.9	35.6	21.4	56.3
Black non-Hispanic	28.9	25.2	18.7	6	25.8	30.4
Hispanic	13.4	20.6	21	39.2	27.9	2
Asian/Pacific Islander	11.1	19.9	3.9	11.8	11.3	4.4
American Indian/Alaskan						
Native	0.1	0.3	0.4	1.1	0.2	0.4
Nonresident alien	7.9	10	2.1	0.9	9	1.8
Students receiving financial aid (%)	73	67	57	62	56	46
First-time student retention rate <sup>b</sup> (%)						
Full time	65	69	60	64	60	59
Part time	40	58	45	43	47	44
Graduation rate <sup>c</sup> (%)	24	14	26	19	11	10
Transfer-out rate (%)	20	23	13	9	19	13

SOURCE: All data are from the Integrated Postsecondary Education Data System (IPEDS) (2006).

NOTES:

<sup>a</sup> Enrollment totals represent “full-time-equivalent” (FTE) students.

<sup>b</sup> Retention rates measure the percentage of entering students who continue their studies the following fall.

<sup>c</sup> Graduation and transfer-out rates are calculated for full-time, first-time undergraduates who began their program in 2003. Graduation rates measure the percentage of entering students who complete their program in a certain time. Transfer-out rates measure the percentage of entering students who transfer to another institution within 150 percent of the normal time to program completion.

composition; in spring 2008 and beyond, developmental math is linked with various college-level courses to better match students' needs and interests.

The links offered in spring 2008 have themes such as "Money Talks and Numbers Speak" (linking math and speech). Professors visit each other's classes and meet before and throughout the semester to coordinate assignments.

### **Houston Community College System (HCCS)**

HCCS is a very large, multicampus community college. As of spring 2008, Northline campus is the only one participating in the study. HCCS's learning communities link developmental math and a student success course. They target first-time students who assess into the lowest levels of developmental math. The student success course is designed to prepare students for the demands of college courses, by emphasizing study skills and accessing campus resources. Math faculty collaborate with student success course instructors in order to maximize opportunities for students to make connections with the math curriculum. A tutor, who is either a staff member or another student, is assigned to each math class.

### **Hillsborough Community College (HCC)**

HCC is a large, four-campus community college. Two of the campuses, Dale Mabry and Ybor, are currently participating in the study. HCC's learning communities link developmental-level reading with a student success course and are targeted to first-time students who assess into developmental reading. The student success course is a credit-bearing class that focuses on acclimation to college, study skills, and other tools to help students do well in their reading course. Faculty assign common work within links.

### **Merced College**

Merced is a midsize, single-campus community college. Its learning communities link developmental-level English with either developmental reading, developmental math, or a student success course. The learning communities are designed for both new and returning students who assess into developmental English. Professors visit each other's classes and coordinate assignments. Several of the links have Supplemental Instructors — trained peer instructors who facilitate voluntary group study sessions.

### **Community College of Baltimore County (CCBC)**

CCBC is a large, multicampus community college. Two of the campuses, Essex and Catonsville, will be included in the study in spring 2008; a third, Dundalk, will join in fall 2008. Learning communities at CCBC link the highest level of developmental English or reading with

a college-level course, supplemented by a Master Learner component. The learning communities target all students in need of one of the English or reading courses. The Master Learner is a faculty member (sometimes the developmental instructor) who sits in on the college-level course and conducts a weekly, one-hour, noncredit seminar on learning-to-learn in the context of the college-level course. Links often feature joint themes and overlapping assignments.

### **Kingsborough Community College (KCC)**

KCC is a large, single-campus community college. In 2003, MDRC launched an impact evaluation of KCC's first-semester learning communities as part of the Opening Doors demonstration. When KCC decided to develop learning communities with an occupational focus, MDRC approached the college again to participate in the current demonstration. This model is growing in popularity nationwide and is highly relevant to the problem of critical shortages of skilled workers in such occupations as nursing.

KCC's current learning communities target continuing or transfer students who have declared one of five occupational majors and are designed to strengthen the students' industry knowledge and academic and study skills in order to support their work in occupation-oriented courses. The learning communities link an "integrative seminar" with two courses required for the major. The two content courses are three or four credits each and vary by link. The integrative seminar is a single-credit course that meets for two hours a week and is taught by a KCC faculty member from the given major. Representatives from employers visit the seminar, and students also visit workplaces in the local community. In addition, each seminar has an adjunct English faculty member to provide support and guidance for assignments from the content courses. Linked professors and seminar leaders meet regularly to work on course integration, faculty development, and program development.

### **Study Intake and Random Assignment**

Study intake and random assignment, which began in spring 2007 for the first cohort of sites and in fall 2007 for the second cohort, will continue for a total of four semesters, to result in a sample at each college of approximately 1,000 students enrolled in the study. This sample size is judged to be sufficient to detect modest impacts. The study intake process, although roughly similar in each of the six sites, was adapted to fit the registration process at each campus.<sup>51</sup> The following is a generic description of how students are enrolled in the study.

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<sup>51</sup>Random assignment studies are rare in community colleges. The process of fitting study procedures — including informed consent, a questionnaire, and random assignment — into the normal enrollment and registration process is complex and demanding. All six colleges, and particularly the advising staff, worked closely with MDRC staff to design and implement these intake procedures.

At the time they register for classes, students are screened for study eligibility, and they meet with a study representative from the college (typically an academic adviser or a registrar), who informs them about the learning communities program and the evaluation. The explanation includes a description of random assignment as a lottery-like process that is used to determine who can enroll in a learning community as well as information about their rights as study subjects. Before they go through random assignment, students who agree to participate in the study are asked to sign an informed consent agreement to indicate their understanding of their role in the evaluation and also to complete a Baseline Information form (BIF). The BIF is designed to capture information about the students' demographic characteristics and educational goals, and it varies slightly across sites.

Students are randomly assigned into the program group, which enrolls in a learning community, or the control group, which enrolls in the standard courses available to all students at the college. Generally, students are assigned using a 50:50 ratio. However, at some colleges, this ratio was changed to 60:40 during the first semester of random assignment, to ensure that the learning communities scheduled by the college were filled. To maximize contrast between the two research samples, students in the control group generally agree not to enroll in learning communities that involve developmental classes for at least two years after random assignment, but enrollment restrictions vary somewhat by site and are specified on the informed consent agreement. For example, students in the control group at HCCS are not allowed to enroll in any learning communities during the first semester, but they are allowed to enroll in nonmathematics learning communities in subsequent semesters.

## **Strengthening the Learning Communities Through Technical Assistance**

From its inception, the Learning Communities demonstration has been concerned with conducting a fair test of the learning communities model. A fair test of learning communities depends on strong program implementation and a distinct contrast from the classroom experience outside the learning communities. Both the colleges and the researchers seek to ensure that each learning community model is implemented as intended by each site, that each program is as robust as possible, and that the contrast between the experience of students enrolled in the learning communities and students enrolled in the control group is as sharp as possible. To this end, MDRC provides technical assistance to each site in the demonstration.

As of December 2007, three technical assistance consultants have been involved with the Learning Communities demonstration. Additional consultants may be added as sites encounter new or different implementation challenges. Each of the technical assistance providers chosen to work with the sites has an extensive background in learning communities, with expertise in specific areas, such as curriculum integration and professional development. The consul-

tants have conducted site visits to most of the colleges to work with faculty and college administrators on such topics as faculty collaboration and pedagogical practices in learning communities. These visits will continue throughout the demonstration.

A three-day summer institute in 2007 brought together teams from seven colleges, five of which are currently in the study. The institute focused on integration (social and academic), faculty collaboration, peer collaboration, active learning instructional strategies, administrative support, assessment of student work for evidence of integrated learning, and other topics that stimulated rich discussions of what good learning communities should look like. Follow-up phone calls and visits were conducted to learn how sites implemented these ideas and to offer support to college administrators and faculty.

## The Research: Goals, Methodology, and Data

This section describes the implementation study, the impact study, and the cost study. While the quantitative impact findings from the impact study are the primary focus of the research, findings from the implementation and cost studies contribute to a well-informed *interpretation* of the impact findings.

### The Implementation Study

Implementation studies help researchers interpret and explain the impacts — or lack of impacts — of interventions. Implementation data can provide a glimpse into the “black box” of the intervention: in this case, the teaching, learning, and social interaction that goes on both inside and outside the classrooms of learning communities. A guiding question for the implementation study asks whether the learning communities as delivered are robust and incorporate the core dimensions of the model. Robust learning communities that adhere to those core dimensions should create an experience that is clearly distinct from that of students and instructors teaching and learning within standard, stand-alone developmental courses.

Implementation data can also serve to measure “fidelity,” or the extent to which the intervention is implemented close to its original design over time, across learning communities, and across colleges. This is particularly important for the Learning Communities demonstration, as considerable variation in implementation is expected both across and within colleges. This happens primarily because, despite their popularity, learning communities can be challenging to implement even in their most basic form. For example, grouping students into cohorts and block-scheduling classes is an unfamiliar task for most community colleges. Designing and delivering the more “high-end” learning communities — complete with a thematic focus, a fully integrated curriculum, and interactive instructional strategies — can be a daunting task in an institution where faculty rarely collaborate with each other on curricular matters.

With these considerations in mind, the implementation study is designed to:

1. Document how the learning communities programs were initiated, designed, and operated at the participating colleges
2. Identify factors that promoted or impeded the smooth implementation of the learning communities programs at each site and document variation from year to year
3. Measure variation in implementation across learning communities within the same college and across the six colleges

4. Compare the classroom and college experiences of instructors and students in both the program group and the control group in order to determine the degree of contrast between the two experiences

### **Measuring the Implementation of Learning Communities**

The six colleges in this demonstration have each developed a learning communities model that addresses their students' specific needs, fits their institutional capacities, and reflects their own "theory of change." But these models have all evolved from a common history, body of research, and set of beliefs about what learning communities in community college settings should look like. Most researchers and practitioners agree that a set of "core dimensions" — when taken together and implemented with a reasonable degree of fidelity — results in robust learning communities. These core dimensions constitute a framework to guide the implementation study. They are shown in Table 3, along with examples of indicators of their robustness. (See Appendix A for a full list of indicators.) The extent to which the colleges in the demonstration succeed in implementing learning communities with most or all of these dimensions is a measure of the fidelity of the implementation of the learning community model.

Data collection for the implementation study will be geared toward measuring indicators of these core dimensions as well as the extent to which important site-specific features of learning communities (such as the integrative seminar at KCC or the Master Learner at CCBC) are implemented as the colleges intended. Some indicators will be measured using a rating system that will generate a numeric "fidelity score" for certain dimensions. This will allow for an overall ranking of the six colleges along a continuum of fidelity. For example, fidelity indices will be constructed to rate the degree to which curriculum is aligned or integrated across two or more courses in a given learning community. Researchers will use instruments to record ratings based on interview and focus group responses, classroom observations, and faculty survey responses.

### **Data Collection Activities**

The implementation study will rely on a variety of data collection strategies, a complete list of which is included in Appendix A. This section describes the three primary data sources for the implementation study: site visits, a faculty survey, and a review of existing documents and materials.

#### *Site Visits*

The implementation study will rely heavily on qualitative data gathered during research site visits to the colleges. Two site visits will be conducted at each college over the course of the demonstration, during the second semester following random assignment (spring 2008 for the

## The Learning Communities Demonstration

**Table 3**

### Core Dimensions of Learning Communities in Community Colleges

Core Dimension	Description	Examples of Key Indicators <sup>a</sup>
Integration	Curricular or programmatic linkages organized around common themes in order to construct shared, relevant teaching and learning experiences.	Linked, interdisciplinary courses; contextualized curriculum; merged syllabi, integrated curricula; attached seminars; joint assignments and grading
Active-learning pedagogy	Use of pedagogy that promotes critical thinking through experiential, collaborative, and reflective learning. Purposeful classroom and co-curricular activities that relate course content to real-world issues/events.	Problem- or project-based assignments; interactive classroom dialogue; small group or dyads; labs or field study
Faculty engagement	Opportunities for instructors to work together on linking activities and assignments across subjects and to share or develop effective pedagogy and community-building approaches.	Co-teaching, team teaching; cross-course schedule planning; professional development to support teaching in learning communities
Student engagement	Opportunities for students to create meaningful peer networks that promote academic support and social bonding. Students are encouraged to play an active role and have an active voice in their shared learning.	Cohorts; peer advisers/mentors; study groups; informal social events and co-curricular activities
Supplemental student support services	Knowledge and utilization of campus resources that enhance the academic and social learning experiences of learning community students. Integration of these services with classroom activities.	Counseling; tutoring; financial aid; job/career development; research/library resources; access to computers labs/laptops
Institutional/structural transformation	Recognition of and institutional support for learning communities from the larger campus community. Ensuring that learning community objectives fit well with the overall institutional mission and objectives.	Support/involvement from top administration; funding for sustainability efforts, enrollment outreach and marketing to students

**NOTE:**

<sup>a</sup>Appendix A contains a list of all potential indicators for each dimension.

first cohort and fall 2008 for the second cohort) and during the fourth semester following random assignment (spring 2009 for the first cohort and fall 2009 for the second cohort).

Since each learning communities program is based on a unique configuration of courses and experiences, field protocols will be designed to capture both the core dimensions of learning communities and the site-specific components at each college, as well as the standard experience of students at each college. Field researchers will conduct a variety of activities while on-site, and each activity is designed to measure specific indicators.

- **Open-ended interviews** will be conducted with college administrators and program staff associated both with learning communities courses and with the standard developmental courses. These interview sessions are designed to document the histories and current status of the learning communities programs, any changes made to the original design of the programs and reasons for those changes, and the lessons learned during the implementation. Interview responses can also gauge the administrative knowledge and support for learning communities programs at the colleges, how the programs generally fit in with other college initiatives, an understanding of any large institutional issues or challenges the colleges face — or are likely to face — that may affect the long-term efforts to institutionalize learning communities on campus, and what steps learning communities administrators and staff have undertaken, if any, to sustain their programs after the demonstration is over.
- **Faculty focus groups** will be conducted with instructors both in and outside learning communities program. These focus groups will provide an opportunity to learn about the similarities and distinctions that exist between teaching in learning communities and standard developmental courses (for example, pedagogical practices, curricular structure, course scheduling), the nature of faculty and student interactions within both the treatment and the control classroom environment, and how faculty come to be recruited and trained for learning communities.
- **Student focus groups** will be conducted with students enrolled both in learning communities programs and in stand-alone versions of the courses in the learning communities. Students who participate in these focus groups will be asked to volunteer their thoughts about what teaching techniques they think have best helped them learn course content, the nature of their interactions with faculty and other students in class, and their knowledge and use of campus resources (such as counseling, tutoring, and library services) to aid in their understanding of course content.

- Field researchers will conduct **classroom observations** in a small sample of learning communities. These observations will provide qualitative data on pedagogical approaches, interactions among students and between students and faculty, evidence of integration, and the physical settings of particular learning communities.

### *Faculty Survey*

About 50 faculty members from each college will be asked to complete a questionnaire. These will include as many faculty members teaching in the learning communities programs as possible as well as a sample of faculty members who teach comparable, stand-alone courses. In order to measure the qualifications, attitudes, and pedagogical practices of instructors, the survey will include items such as instructors' confidence in students' ability to learn content, types and levels of interactions with students inside and outside the classroom, professional development experiences, collaborative endeavors with other faculty and staff, use of other campus resources to enhance teaching and learning, and perceptions of student performance and effort in their courses.

In addition to providing insight into promising practices within the classrooms of learning communities, the faculty survey will serve as an important source of information about the differences between faculty who teach in the learning communities and those who do not. The demonstration is not designed to control for "teacher effects," which would have necessitated random assignment of faculty to learning communities and to stand-alone developmental courses. But the implementation study — primarily through the faculty survey — will document and report measurable differences in terms of their background, experience, full-time or part-time status, and other variables that may be associated with student outcomes.

The faculty survey will be administered in fall 2008 to the first cohort of colleges and in spring 2009 to the second cohort.

### *Review of Documents*

Various *program documents* that describe planning and ongoing activities and events related to the learning communities programs will be analyzed. These documents will include course syllabi or course descriptions (to look for evidence of alignment or integration across courses) and, if available, teacher logs of classroom interactions, coursework assignments and activities, descriptions of group project assignments, student writing samples, and student evaluations of teachers.

## **The Time Line for the Implementation Study**

Table 4 summarizes the schedule of data collection activities planned for the implementation study and shows how the implementation findings will be incorporated into the project's reporting schedule. Site visits are scheduled to occur in the second and fourth semesters following random assignment. While the collection of some documents for analysis will take place during the scheduled implementation research site visits, other document collection will take place prior to or following the site visits.

## **The Impact Study**

Given both the limited evidence of the benefit of learning communities for students who are academically underprepared and the pattern of low persistence in college among this group, more research is needed to discover whether learning communities will engage such students and result in better outcomes. The impact study seeks to answer the following questions:<sup>52</sup>

1. What are the effects of learning communities on student achievement, as measured by assessment test scores in English and math, credits earned in developmental and regular college courses, grades, and other outcomes?
2. What are the effects of learning communities on students' academic persistence in higher education?

## **Methodology**

As discussed above, a random assignment design will be used to answer these questions. Random assignment is considered the “gold standard” of analysis because tests of differences between groups that are randomly assigned are less biased and more powerful than similar tests between nonequivalent groups, allowing such differences to be interpreted as causal. As a result, greater reliance may be placed on the magnitude and inference of impact estimates derived from this methodology.

### *Data and Outcomes of Interest*

To measure the effects of learning communities on the acquisition of basic skills, course completion, persistence, and other outcomes, the study will rely principally on student tran-

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<sup>52</sup>Separate analyses of state-level data by NCPR partners will inform how the results of the impact study may generalize to other institutions, by comparing students, schools, and colleges in this demonstration with other students in selected states. This analysis will also draw conclusions about the efficacy of other types of remediation — relative to learning communities — in improving the success of academically underprepared students.

**The Learning Communities Demonstration**

**Table 4**  
**Time Line for the Implementation Study**

	<b>Fall 2007</b>	<b>Spring 2008</b>	<b>Fall 2008</b>	<b>Spring 2009</b>	<b>Fall 2009</b>	<b>Spring 2010</b>	<b>Fall 2010</b>	<b>Spring 2011</b>	<b>Fall 2011</b>
<b>First cohort (KCC, QCC, HCC)</b>	Random assignment begins	Round 1 research visit	Faculty survey	Round 2 research visit					
		Document collection →							
<b>Second cohort (Merced, HCCS, CCBC)</b>		Random assignment begins	Round 1 research visit	Faculty survey	Round 2 research visit				
			Document Collection →						
<b>Reports</b>					Interim report			Final report	How-to guide

scripts provided by the participating colleges. These data will be collected for up to two years after random assignment for everyone in the sample. When study sites are part of larger systems (for example, QCC and KCC in the City University of New York), transcripts for sample members who move to other institutions within the system may be gathered from central offices. Building on MDRC’s experience with the Opening Doors demonstration, the following outcome measures are typically available: registration for any courses, number of courses attempted (regular and developmental), number of courses passed (regular and developmental), withdrawal from one or more courses, status of English and/or math placement tests, total semesters enrolled, total credits earned, and grade point average (GPA). In addition, course-level information — such as course title and possible credits — major, and transfer to other postsecondary institutions may be collected. If available, data from a uniform test of basic reading, writing, and math skills both at baseline and at a follow-up point (most likely one or two semesters after random assignment) for all program and control group members may be collected. Having two data points will allow the study to measure the effectiveness of learning communities on increasing pass rates for these important assessments.

As a secondary measure of persistence in postsecondary education, data from the National Student Clearinghouse will also be employed. This database, which captures information from 91 percent of college students nationwide, will be used to create measures for students in the sample who transfer to other colleges or universities. For example, it will allow the tracking of transfers to four-year universities, which is widely regarded as one measure of student success.<sup>53</sup>

### *Size of Sample Needed*

How many students are needed to detect policy-relevant effects on achievement, persistence, and retention? Overall, the experimental research sample at each site will comprise lower-division community college students whom the colleges identify as in need of developmental English or math.<sup>54</sup> Table 5 lists additional eligibility criteria, by site.

While each site is expected to enroll a minimum of 1,000 students into the research sample over a two-year period, some sites may exceed or fall short of this goal. Based on data from the Opening Doors demonstration, Table 6 shows the minimum detectable effect size (MDES) that can be detected with a given sample size and various ratios of treatment group to control group members (random assignment ratios). An MDES is a simple way to express the statistical precision of an impact study design. Intuitively, it is the smallest program impact that

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<sup>53</sup>Rouse (1995) and Alba and Lavin (1981), for example, find that community colleges divert some students from attending four-year universities and that such students, in turn, complete fewer years of education.

<sup>54</sup>The exception to this is KCC, which is implementing career-focused, second-semester learning communities for students who have passed all remediation requirements.

### The Learning Communities Demonstration

**Table 5**

#### Determinants of Eligibility for the Learning Communities Demonstration, by College

Sample Selection Criteria	KCC	QCC	HCC	Merced	HCCS	CCBS
<b>Age</b>	18 and over	18 and over	18 and over	18 and over	18 and over	18 and over
<b>Collegiate level</b>	Continuing or transfer students	First-year students meeting remediation criteria; transfer students with fewer than 15 credits and returning students if failed lowest-level remedial math previously	First-year students	First-year and continuing students	First-year students	First-year students, continuing students, and transfer students
<b>Remediation level</b>	None	Math (lowest level only)	Reading (all levels)	English (all levels)	Math (lowest level only)	English or reading (highest levels only)
<b>Subgroups of interest</b>	Gender; Allied Health majors; Nursing majors	Gender; students requiring 2 or more remedial classes	Gender; students requiring 2 or more remedial classes	Gender; students requiring 2 or more remedial classes	Gender; students requiring 2 or more remedial classes	Gender; students requiring 2 or more remedial classes

**The Learning Communities Demonstration**  
**Table 6**  
**Minimum Detectable Effect Size (MDES) (%), by**  
**Various Total Sample Sizes and Ratios of**  
**Treatment Group Members to Control Group Members**

-	Random Assignment Ratio				
	50:50	60:40	70:30	80:20	90:10
Total Number of Students					
400	0.25	0.25	0.27	0.31	0.42
600	0.20	0.21	0.22	0.25	0.34
800	0.18	0.18	0.19	0.22	0.29
1,000	0.16	0.16	0.17	0.20	0.26
1,200	0.14	0.15	0.16	0.18	0.24
1,400	0.13	0.14	0.15	0.17	0.22
1,600	0.12	0.13	0.14	0.16	0.21

NOTE:

Calculations assume a 10 percent significant level, 80 percent power, and two-tailed test. See Appendix A for the exact formula employed in the table.

can be measured with confidence, given random sampling and estimation error.<sup>55</sup> This metric, which is used widely for measuring the impacts of educational programs, is defined in terms of the underlying population's standard deviation of student achievement. For example, an MDES of 0.25 indicates that the study can reliably detect (80 percent of the time) a program-induced increase in student achievement that is equal to or greater than 0.25 standard deviation of the existing student distribution. Impacts that are more precise than this (that is, smaller than this) have a smaller likelihood or power of being detected by the study.

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<sup>55</sup>Bloom (1995). An MDES is the smallest true program effect size that would have an 80 percent chance of being detected (have 80 percent power) using a two-tailed hypothesis test at the 10 percent level of statistical significance.

Table 6 presents the MDES for different total sample sizes and random assignment ratios, assuming a significance level of 10 percent, 80 percent power, and a two-tailed test.<sup>56</sup> The fourth row of the table shows that, under the proposed total sample size of 1,000 students equally divided between treatment group and control group members, each site will be able to detect effect sizes as small as 0.16. If the random assignment ratio is changed to 60 percent treatment group members and 40 percent control group members (the second column), the study is still able to detect impacts of this magnitude. As the ratio of treatment group members to control group members becomes extremely unbalanced — as in the 90:10 split in the rightmost column — the MDES increases noticeably to 0.26 standard deviation. All sites in the demonstration are either equally balanced between treatment group members and control group members or have a 60:40 split. The latter change in random assignment ratio was implemented to accommodate the circumstances at specific sites.<sup>57</sup>

Although judgments about whether a specific effect size is large or small are somewhat arbitrary, several useful guidelines exist. Many researchers use a rule of thumb proposed by Cohen, who suggests that effect sizes of roughly 0.20 be considered small, 0.50 be considered moderate, and 0.80 be considered large.<sup>58</sup> Lipsey provides empirical support for this typology based on the distribution of 102 mean effect sizes obtained from 186 meta-analyses of treatment effectiveness studies, most of which come from education research. The bottom third of his observed distribution (small effects) ranges from zero to 0.32; the middle third (moderate effects) ranges from 0.33 to 0.55; and the top third (large effects) ranges from 0.56 to 1.26.<sup>59</sup>

Another benchmark for effect size estimates are those from high school interventions that average 0.25 standard deviation and those of small learning groups in the Science, Technology, Engineering, and Mathematics (STEM) fields in community colleges that average 0.21 standard deviation.<sup>60</sup> Given these benchmarks, the study sample size is able to detect relatively small effects.

### **Analytic Strategy**

The primary analytic method to determine program effects will be comparing average outcomes for the program and control group members, using standard statistical tests, such as t-tests. This will generate estimates of the impact of offering access to the learning communities

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<sup>56</sup>A two-tailed test is used because the central policy issue to be addressed by the demonstration is whether the program has *any* effect on student performance.

<sup>57</sup>At several sites, the random assignment ratio was changed to 60:40 in order to prevent the canceling of learning communities for which faculty had already been assigned.

<sup>58</sup>Cohen (1988).

<sup>59</sup>Lipsey (1990).

<sup>60</sup>Hill, Bloom, Black, and Lipsey (2007); Springer, Stanne, and Donovan (1998).

program (the intention-to-treat). A linear model will be used to estimate the impact of learning communities on outcomes:

$$y_{ij} = \gamma_{00} + \gamma_{01}T_i + r_{ij},$$

where  $y_{ij}$  represents an outcome (such as the number of credits attempted) for student  $i$  in learning community  $j$ , and  $T_i$  is an indicator variable equal to 1 for students randomly assigned to the treatment group. To account for the clustering of half the sample into groups of learning communities, heteroscedasticity-consistent White standard errors will be employed.<sup>61</sup>

The coefficient of interest is  $\gamma_{01}$ , as it represents the effect of assignment to a learning community on the outcome of interest. Because of the random assignment process, ordinary least squares (OLS) estimation of  $\gamma_{01}$  will provide an unbiased estimate of the “intention-to-treat” effect, and it is not necessary to control for other student characteristics. Note that the intent-to-treat coefficient estimates the effect of *assigning* a student to the treatment group on the outcome in question. While it estimates the gains that a policymaker can realistically expect to observe from implementing the program (since one cannot fully control for whether students actually participate), it does not necessarily represent the effect of the reforms for those who actually use them.

### Subgroups and Restricted Pooling Across Sites<sup>62</sup>

Two subgroups are of policy interest and will be analyzed separately for each site:

- **Gender.** Compared with females, males are both less likely to enter postsecondary education and at a higher risk of dropping out once enrolled.<sup>63</sup> This problem is particularly acute among men of color.<sup>64</sup> Moreover, results from an earlier MDRC evaluation of learning communities at KCC showed that

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<sup>61</sup> Greene (1997). Many educational researchers employ hierarchical linear models to account explicitly for the nesting often evident in educational research. In this design, only a portion of the sample is nested at the level of the analysis (that is, at the student level). While hierarchical linear models have been proposed for this situation (see Bauer, Sterba, and Hallfors, forthcoming), these methods appear to be very sensitive to noncompliance (authors’ analysis). Having analyzed previous work utilizing both methods of accounting for clustering, the authors find the White-corrected standard error approach to be unbiased.

<sup>62</sup> While the study is sufficiently powered to detect relatively small overall impacts, it can detect only relatively large subgroup impacts. This is indicated in Table 4.4, which show that, with smaller total sample sizes (similar to subgroup sample sizes), the MDES that can be detected is much larger.

<sup>63</sup> Tinto (1993).

<sup>64</sup> Cameron and Heckman (2001).

the magnitude of several of the impacts was larger for males than for females.<sup>65</sup>

- **Need for remediation.** Studies show that students who must take two or more remedial courses (for example, one in English and one in math) are at a higher risk of dropping out and that the dropout rate increases with the number of courses required.<sup>66</sup> Results from an earlier MDRC evaluation of learning communities at KCC showed that students who needed remediation in two areas (math and English) benefited more from learning communities than did students who needed remediation in just one area.<sup>67</sup>

While the study has a sufficiently large sample at each site to analyze each site separately, data on the gender and remedial subgroups or on specific outcomes may also be pooled across certain sites in cases where more precision or more power is needed to calculate results. Pooling will be based on similarities in sites' learning communities models; for instance, HCC, HCCS, and Merced link developmental courses with a student success course, and QCC and HCCS link developmental math with other courses.

## The Cost Study

Any findings of positive impacts of learning communities on student outcomes should be weighed against the cost of conducting "business as usual" for developmental and other students. Learning communities are likely to cost more than regular developmental classes because of such enhancements as additional faculty time, professional development costs, and, often, smaller class sizes. But if learning communities cost significantly more than stand-alone courses and produce little or only modest impacts, scarce resources may better be spent funding less costly programs with equal or larger benefits. This cost study will be conducted in at least two sites, purposely selected to represent contrasting learning communities models.

The cost study will include estimates of the institutional costs of both the overall program and selected components of the program. A standard protocol and simple metrics, such as cost per student enrolled, will ensure comparability across institutions.

Since learning communities are designed to increase student persistence, if the program is successful, community college costs will likely increase as a result of students' attending the

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<sup>65</sup>Scrivener et al. (2008). The KCC evaluation was not sufficiently powered to determine whether the effects for males were significantly different than those for females; pooling across sites in the current demonstration will create a large enough sample to determine statistical significance.

<sup>66</sup>Adelman (2004); Attewell, Lavin, Domina, and Levey (2006); Adelman (1998).

<sup>67</sup>Scrivener et al. (2008).

community college for a longer period of time. However, it is important to distinguish the costs of operating the learning communities from the costs of additional community college attendance as a result of the intervention. This can be accomplished by focusing on the period of time when students are expected to receive the intervention and measuring all relevant costs for both the program and the control group. The difference in costs during this period will be attributed to the net cost of providing learning communities. Any costs associated with student persistence will not be considered a learning community cost.

### **Component Costs of Learning Communities**

Separate per-person cost estimates will be calculated for each relevant component affected by the learning community models. Possible components include the following:

- **Classes.** The costs of class instruction provided to program group members might be compared with the costs of similar classes provided to control group members. Examples of such classes include basic writing, reading, and social sciences. These will be linked classes for the program group but stand-alone classes for the control group. Differences in costs between the two groups might be attributable to differences in class size, the number of faculty, and hours of instruction.
- **Group activities.** Smaller groups within a learning community might be formed around particular interests or one-time events, such as field trips, social activities, and seminars.
- **One-on-one assistance.** Learning community services such as tutoring, counseling, and case management would be calculated separately.
- **Training and development.** This component would include any extra training provided to staff to implement the learning communities model.
- **Program coordination.** Costs associated with having a learning community coordinator would be captured in this component. The costs associated with implementing the evaluation (for example, assisting with the random assignment process) will be subtracted, since these are research costs and not the costs of implementing the program.

### **Methodology**

To estimate the per-person component costs above, the cost study will begin by first estimating unit costs: the costs of providing component services to one person over a specific time period. These can be determined by first calculating the total cost of providing a given program

component over the time period (whether a class session, a semester, a week, a month, or a year) and then dividing by the number of individuals who participated in the activity or received the service over the corresponding time period. Thus, data are needed on both the total cost and the number of participants during the time period.

The unit cost for a component will then be multiplied by the duration of participation in or receipt of the component. For example, if a unit cost of a particular class is calculated at \$150 per semester credit hour, \$150 would be multiplied by the average number of semester credit hours that the program group members received. Different unit cost estimates will be calculated for the program group components and the control group components.

The gross cost per program or control group member is simply the aggregate component costs per person calculated above. The difference between the gross cost per program group member and the gross cost per control group member yields the *net cost* of the learning community program.

Cost data will be collected beginning in 2009 and will be analyzed separately by site, including estimates for unit costs per component, participation estimates, gross cost per program and control group member, and net cost. Any variation in costs across the sites will be explained using implementation data. Differences might be attributed to differences in the mix of activities provided, in unit cost estimates, and/or in participation levels.



## **Appendix A**

### **Core Dimensions of Learning Communities and Their Indicators**



Appendix Table A.1

List of Core Dimensions	Data Collection Sources								Documents/ Records Review	
	Interviews				Focus Groups		Faculty Survey	Observations		
	President	Faculty	Dean(s)	Student Services	Faculty	Students				
<b>Integration</b> Integrated or linked curricula between two or more courses Merged syllabi Assignments built around common themes/topics Use multiple perspectives to explain content and examine issues Identification of connections and conflicts among diverse disciplines Attached seminars, special topics lectures, or research/field study sessions linked to courses Joint assignments, projects, and grading practices across courses or disciplines Blocked or aligned course schedule					X	X	X	X	X	
					X	X	X	X	X	
					X	X	X	X	X	
					X	X	X	X	X	
					X	X	X	X	X	
		X			X	X	X	X	X	
<b>Active-Learning Pedagogy</b> Project- and problem-based learning opportunities in the classroom Interactive dialogue or discussion regarding content between students and faculty members Small group or dyads that promote cooperative learning and critical thinking Reflective or responsive writing opportunities Interactive labs and field study that enhance content learning Classroom practices and discussion around diversity and equity issues Instructors actively reach out to students experiencing difficulty during class					X	X	X	X		
					X	X	X	X		
					X	X	X	X		
					X	X	X	X	X	
					X	X	X	X	X	
					X	X	X	X	X	
					X	X	X	X		

(continued)

NOTE: This matrix includes all *potential* indicators for each dimension and the data sources where they can be found. It was created as a tool to guide protocol development for the implementation study. The final protocols for each of these data sources will include instruments to measure *selected* indicators.

Appendix Table A.1 (continued)

List of Core Dimensions	Data Collection Sources							Documents/ Records Review	
	Interviews			Focus Groups		Faculty Survey	Observations		
	President	Faculty	Dean(s)	Student Services	Faculty	Students			
<b>Faculty Engagement</b>									
Collaborative course planning and teaching between faculty in linked courses	X				X		X		
Regular, ongoing meetings and communication between faculty members during term		X			X		X		
Faculty work together to develop theme-based assignments or projects		X			X		X		
Team teaching or co-teaching across courses or disciplines		X			X	X	X		
Opportunities for professional development to learn and hone learning community pedagogical practices		X			X			X	
Compensation or incentives for faculty to participate in learning communities									
Faculty promote a sense of community, of belonging, and of shared enterprise with students and other faculty in the learning community classroom		X			X	X	X		
<b>Student Engagement</b>									
Cohort of students enrolled in paired/multilinked and/or sequential courses		X			X	X	X	X	
Creation of faculty-mandated or informal student dyads or study groups		X			X	X	X		
Diverse student groupings across race, culture, gender, and so on.		X			X	X		X	
Co-curricular social activities or events connected to courses (such as field trips, service learning or community-based projects, meal gatherings)		X			X	X			
Informal social interactions or bonding between learning community students outside class		X			X	X	X	X	
Learning community student perception of more intimate or meaningful relationships with cohorts than with other students									
Learning community students develop confidence as independent learners	X				X	X	X		

(continued)

Appendix Table A.1 (continued)

List of Core Dimensions	Data Collection Sources								Documents/ Records Review	
	Interviews				Focus Groups		Faculty Survey	Observations		
	President	Faculty	Dean(s)	Student Services	Faculty	Students				
<b>Supplemental Student Support Services</b> Increased knowledge and use of various academic support services by learning community students (such as counselors, tutors, financial aid, library resources.)		X		X	X	X	X			
Student service staff contribute to syllabus or curriculum development		X		X	X		X		X	
Student service representatives make presentations in classrooms regarding campus resources		X		X			X		X	
Student services staff and administrators meet with faculty regarding student academic or social needs		X		X	X		X			
Faculty actively refer students to campus resources		X		X	X		X			
Perception of collaborative relationships between instruction and student services		X	X	X	X		X			
<b>Institutional/Structural Transformation</b> Increased awareness of learning communities by administration and larger campus community	X	X	X	X	X		X			
Perception of learning communities as an institutional priority	X	X	X	X	X		X			
History of learning communities at college	X	X	X	X						
"Fit" between learning communities goals/outcomes and mission of college	X	X	X	X	X		X			
Sustainable funding for learning community programs growth and development	X	X	X		X		X			
Regular communication between upper-level administrators and frontline learning community staff	X	X	X	X	X		X			
Targeted, clearly defined learning outcomes		X			X	X	X			
Prevalence of LC-inspired pedagogical practices in non-learning community settings	X	X	X	X	X		X			

## SOURCES:

Smith, MacGregor, Matthews, and Gabelnick (2004); Engstrom and Tinto (2007); MDRC (2005); and Oertel (2001).



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